# Intervals, Transformations, and Slope Solution (version 41)

1. The function $f$ is graphed below.
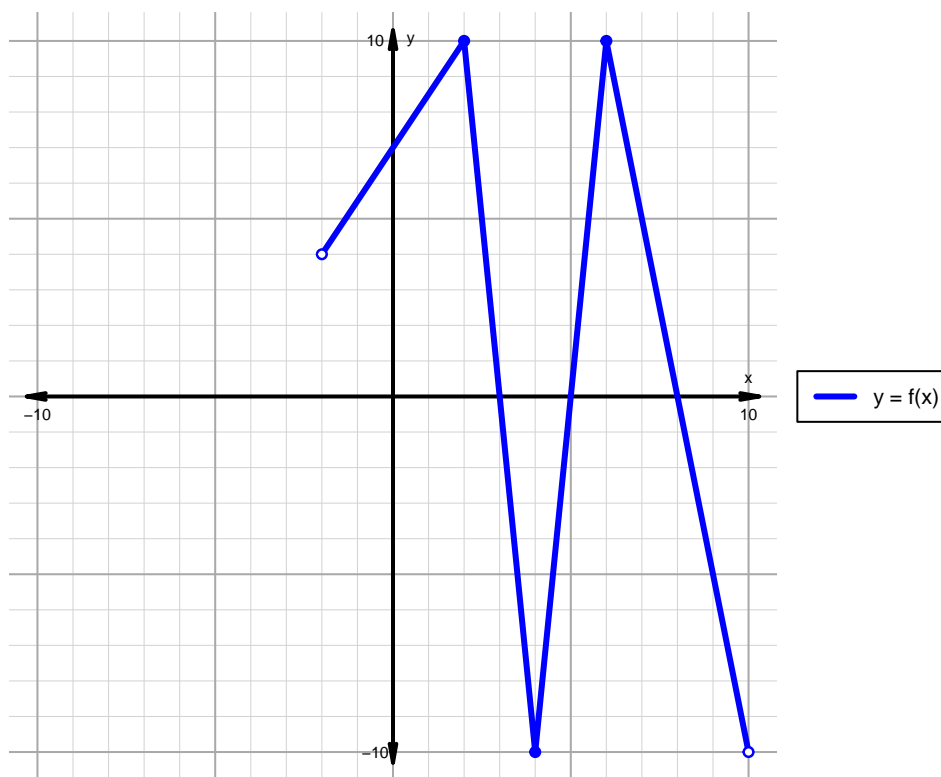


Indicate the following intervals using interval notation. Remember, you can use $\cup$ between two intervals to indicate the union. Except for range, all intervals will indicate $x$ values; this is standard.

| Feature | Where |
|---|---|
| Positive | $(-2, 3) \cup (5, 8)$ |
| Negative | $(3, 5) \cup (8, 10)$ |
| Increasing | $(-2, 2) \cup (4, 6)$ |
| Decreasing | $(2, 4) \cup (6, 10)$ |
| Domain | $(-2, 10)$ |
| Range | $(-10, 10)$ |

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2. In the four graphs below, $y = f(x)$ is graphed as a dotted line. Please add the indicated transformed graphs indicated by the equations below using a solid line.

$y = f(x+2)$

$y = f(-2 \cdot x)$

$y = -2 \cdot f(x)$

$y = f(x) - 2$
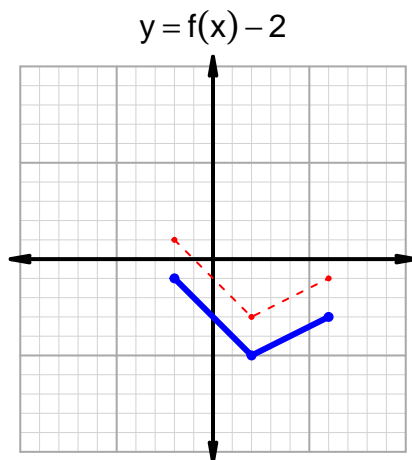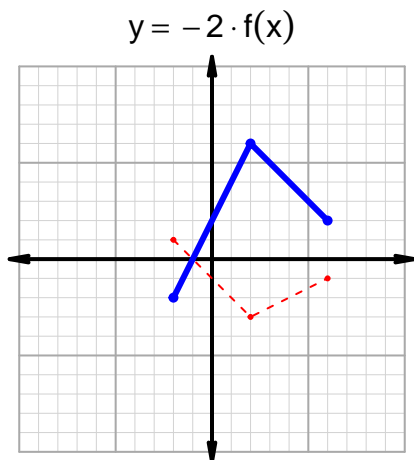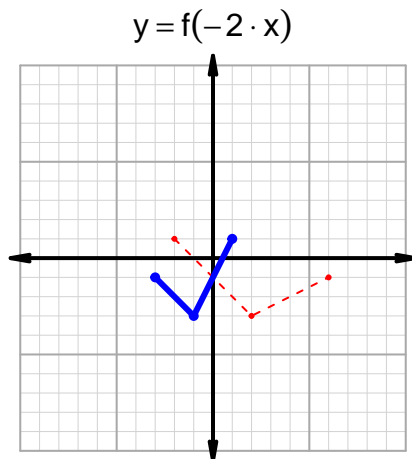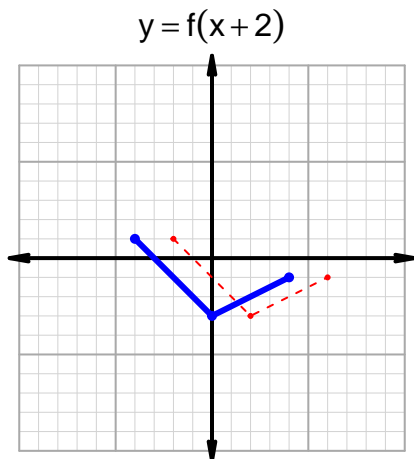


3. Let function $g$ be defined by the table below. Use the formula $\frac{g(x_2)-g(x_1)}{x_2-x_1}$ to find the average rate of change between $x_1 = 13$ and $x_2 = 48$. Express your answer as a reduced fraction.

| $x$ | $g(x)$ |
|-----|--------|
| 13  | 26     |
| 26  | 48     |
| 46  | 13     |
| 48  | 46     |

$\frac{f(48)-f(13)}{48-13} = \frac{46-26}{48-13} = \frac{20}{35}$

The greatest common factor of 20 and 35 is 5. Divide numerator and denominator by the greatest common factor.

$$\text{AROC} = \frac{4}{7}$$